IN THE ABSTRACT:

Please amend the abstract of the disclosure as follows:

--The present invention provides precise temperature estimation in a heat treatment apparatus that estimates temperatures of process objects by using a thermal model and performs a heat treatment while performing a temperature control based on the estimated temperatures. The heat treatment apparatus (1)~~1~~ includes a processing vessel (11)~~11~~ accommodating plural wafers W, plural heaters (31 to 33)~~31 to 33~~ and plural temperature sensors (S1 to S5)~~S1 to S5~~, and stores the thermal model. The heat treatment apparatus 1 estimates temperatures of the wafers W based on outputs of the temperature sensors (S1 to S5)~~S1 to S5~~ by using the thermal model and controls the heaters (31 to 33)~~31 to 33~~ based on the estimated temperatures, applying a heat treatment to the wafers W. The thermal model for an individual apparatus is made by calibrating a standard thermal model designed for a standard apparatus. The standard model calibration is performed by heating an interior of the processing vessel (11)~~11~~, measuring the temperatures of the wafers W in the processing vessel (11)~~11~~, estimating the temperatures of the wafers W by using the thermal model, comparing the measured temperature and the estimated temperature, and calibrating the standard thermal model so that the measured temperature substantially coincides with the estimated temperature.--